Unassigned, but suggested: Problems 1, 10, 13, 17, 20 in Section 0.3
Unassigned, but suggested: Problems 2, 3, 5, 6, 9 in Section 1.1

1.1 Problem 0.3.3

Finish the proof of Proposition 0.3.15.

Solution. □

1.2 Problem 0.3.4

a) Prove Proposition 0.3.16.

Solution. □

b) Find an example for which equality of sets in $f(C \cap D) \subset f(C) \cap f(D)$ fails. That is, find an f, A, B, C, and D such that $f(C \cap D)$ is a proper subset of $f(C) \cap f(D)$.

Solution. □

1.3 Problem 0.3.16

Find the smallest $n \in \mathbb{N}$ such that $2(n+5)^2 < n^3$ and call it n_0. Show that $2(n+5)^2 < n^3$ for all $n \geq n_0$.

Solution. □

1.4 Problem 1.1.1

Prove part (iii) of Proposition 1.1.8.

Solution. □

1.5 Problem 1.1.4

Let S be an ordered set. Let $B \subset S$ be bounded (above and below). Let $A \subset B$ be a nonempty subset. Suppose all the inf's and sup's exist. Show that

$$\inf B \leq \inf A \leq \sup A \leq \sup B.$$

Solution. □